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Notice of Allowability	Application No.	Applicant(s)	
	09/996,523	GAO ET AL.	
	Examiner	Art Unit	
	Kallambella Vijayakumar	1751	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 02/14/2005.
2. ☒ The allowed claim(s) is/are 13-21,23,24 and 26-29.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>03/15/2005</u> . |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>10/16/2002</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

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EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Douglas McKinley on 03/15/2005.

The application has been amended as follows:

In Specification, Page 1, Line 6, immediately following the title, INSERT

--This Application is a divisional of US Ser. No. 09/333,876, filed 06/14/99, now US Patent 6,361,861.--

Cancel Claims 22 and 25.

In Claim-23, Line-1, AFTER 'claim' DELETE '22'

And REPLACE with --13--

REASONS FOR ALLOWANCE

Claims 13-21, 23-24 and 26-29 are allowed.

The prior art of record neither teaches nor fairly suggestive of a method of making an array of carbon nanotubes <CNT> over a conductive surface, with the hollow cores filled with more than 10% by a conductive material by the method steps meeting the limitations of the instant claims by the applicants.

The closest prior art by Ren et al (Science, 1998) teaches a process of making aligned CNT over nickel film coated on a glass surface by introducing C_2H_2 as carbon source and NH_3 as co-catalyst (Abstract, Pg 1105, Col-2, Pg 1106, Col-2), but the prior art fails to teach a method of making an array of CNT filled with conductive material meeting the limitations of the instant claims by the applicants. Dai et al (Nature, 1995) teaches a method of forming metal carbide nanorods by reacting the CNT, obtained by reacting C_2H_4 and H_2 , with a volatile metal or non-metal complexes (Pg 375, Col-1, Fig-1). Zhang et al (Science, 1998) teaches a method of forming a SiC core covered with an intermediate amorphous SiO and graphitic outer shells of BN and carbon layers by the laser ablation of compressed mixture of BN, C, SiO and Li_3N , but does not teach forming an array of filled CNT by the method steps claimed by the applicants (Abstract, Pg 974,

Col-2). Mancevski (US-147) teaches a process for making an array of CNT by depositing a catalyst on a substrate and catalytically cracking a hydrocarbide, but does not teach a method of forming an array of CNT filled with conductive filler (Col-3, Ln 32-64). Chang (US-642) teaches a method of making CNT containing encapsulated metal, by forming CNT using an arc process and then contacting with the vapors of metal to be encapsulated (Col-3, Ln 2-25). The prior art of record either solely or in combination does not teach or fairly suggestive of a method of making an array of aligned CNT over a conductive surface, with the cores filled with more than 10% by a conductive material, by the method steps meeting the limitations of instant claims.

The examiner construes the percentages used to represent the cores of the CNT filled with conductive material to be a volume %.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on M-Th, 07.00 - 16.30 hrs, Alt. Fri: 07.00-15.30 hrs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The

fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMV
March 15, 2005


Mark Kopec
Primary Examiner